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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Corzine, et al.

Serial No.: 10/022,757

Examiner: Pritchett, Joshua L.

Filing Date: December 14, 2001

Group Art Unit: 2872

Title: Distributed Bragg Reflector and Method of Fabrication

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TRANSMITTAL OF APPEAL BRIEF

Sir:

Transmitted herewith in *triplicate* is the Appeal Brief in this application with respect to the Notice of Appeal filed on May 5, 2003.

The fee for filing this Appeal Brief is (37 CFR 1.17(c)) **\$330.00**.

(complete (a) or (b) as applicable)

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136(a) apply.

☒ (a) Applicant petitions for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)(1)-(5)) for the total number of months checked below:

- |                                     |              |           |
|-------------------------------------|--------------|-----------|
| <input type="checkbox"/>            | one month    | \$ 110.00 |
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| <input checked="" type="checkbox"/> | three months | \$ 950.00 |
| <input type="checkbox"/>            | four months  | \$1480.00 |

☐ The extension fee has already been filled in this application.

☐ (b) Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.

Please charge to Deposit Account **50-1078** the sum of **1,280.00**. At any time during the pendency of this application, please charge any fees required or credit any overpayment to Deposit Account **50-1078** pursuant to 37 CFR 1.25.

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Typed Name: Carol Marsteller

Signature:

*Carol Marsteller*

Respectfully submitted,  
Jenkins & Gilchrist, P.C.

By *Steven R. Greenfield*  
Steven R. Greenfield  
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Reg. No. 38,166

Date: November 3, 2003

Telephone No. 214/855-4789

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Patent Application  
Docket No: 10010430-1  
47429-00038USPT

**A13 PB**

**11-14-03**

**UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of:  
Corzine et al.

Serial No.: 10/022,757

Filed: December 14, 2001

For: **DISTRIBUTED BRAGG REFLECTOR AND METHOD OF FABRICATION**

§ Confirmation No.: 2523  
§  
§ Art Unit: 2872  
§  
§ Examiner: Pritchett, Joshua L.  
§

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Type or Print Name: Carol Marsteller

Signature

Dear Sir:

**APPEAL BRIEF PURSUANT TO 37 C.F.R. §§ 1.191 AND 1.192**

Appellant hereby appeals to this Board from the decision of the Examiner, dated May 5, 2003, finally rejecting claims 12-20. This Brief is submitted in triplicate and the fee may be charged to Agilent Technologies, Inc. deposit account no. 50-1078.

**I. Real Party in Interest**

The Real Party in Interest is Agilent Technologies, Inc. having its place of business at 359 Page Mill Road, Palo Alto, CA 94304. Agilent Technologies Inc. is the assignee of the above-captioned application as shown by the records of the U.S. Patent and Trademark Office, reel number 012546, frame 0037.

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## II. Related Appeals and Interferences

There are no related appeals or interferences which will directly affect or be directly effected by or have a bearing on the decision of this appeal.

## III. Status of Claims

Claims 1-11 were canceled, without prejudice, in response to an office action restriction requirement dated October 21, 2002. Claims 12-20 are pending in this application. Claims 12-20 were rejected under 35 U.S.C. § 103(a) for being rendered obvious by Tayebati (U.S. Patent No. 6,324,192) in view of Kudo et al. (U.S. Patent No. 5,303,255) and Baillargeon et al. (U.S. Patent No. 6,326,646). A copy of the pending claims is attached herein as Appendix 1.

## IV. Status of Amendments

The claims 12-20 were not amended in response to the Final Office Action dated May 5, 2003. Remarks to the Examiner's rejection were provided, via facsimile on August 5, 2003, in an Amendment responsive to the Final Office Action. In an Advisory Action dated August 27, 2003, the Examiner indicated that the Amendment would not be entered because it raises new issues that would require further consideration and/or a search; and the amendment is not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal. The Examiner further indicated that for purposes of appeal that the proposed amendment will not be entered and that claims 12-20 remain rejected. A copy of the Amendment in response to the Final Office Action is attached herein as Appendix 2.

No amendments were entered in response to the Final Office Action dated March 12, 2003. The claims attached in Appendix 1 of this Appeal Brief reflect Claims 12-20 as presently pending.

#### V. Summary of Invention

Embodiments of the invention are directed to a bragg reflector that includes one or more first layers that are adjacent to one or more second layers. The first and second layers have at least one sidewall. The first and second layers define one or more gaps. A support layer is formed over a portion of the sidewalls to support the second layers against collapse into one the one or more gaps. In another embodiment, a distributed bragg reflector includes a substrate; on the substrate are a plurality of structural layers each spaced apart by a gap. The structural layers each have edges. There is a support layer formed about a portion of the edges of the structural layers. The support layer is for supporting the structural layers.

#### VI. Issues

The issue at hand is whether the Examiner presented a *prima facie* case of obviousness for claims 12-20.

#### VII. Grouping of Claims

It is believed that Claims 12-15 stand or fall together as Group 1 and that Claims 16-20 stand or fall together as Group 2.

## VIII. Arguments

### A. Introduction

The Examiner rejected claims 12-20 under 35 U.S.C. § 103(a) as being rendered obvious by Tayebati in view of Kudo et al. and Baillargeon et al. Tayebati teaches a fabry-perot filter that is tunable. “The device consists of a top and bottom GaAlAs/air mirrors and an AlAs cavity spacing which is etched away to allow the formation of a cantilever. Application of an applied field will change the cavity length and shift the transmission peak of the fabry-perot filter.” (Tayebati at col. 1, lines 49-54). The Tayebati tunable filter technology shown in Figure 1B of Tayebati, and the new VCSEL technology shown in Figure 1C can be combined to yield a new tunable VCSEL technology as shown in Figure 1D. The tunable VCSEL of Figure 1D has the top GaAlAs/air mirror formed into a cantilever which can be moved up and down electrostatically to tune a lasing wavelength. (Tayebati at col. 2, lines 30-36) Thus, it is critical in Tayebati that at least one of the mirror layers is capable of moving up and down electrostatically to tune the lasing wavelength.

Tayebati teaches how its fabry-perot structure is fabricated. Figure 5A shows the cross-section of the starting substrate which consists of two mirror stacks separated by a sacrificial layer. By selectively removing the sacrificial layer, the top mirror can be machined into a cantilever or a platform. The cantilever or platform contains the top distributed bragg reflector (DBR), whereas the substrate contains the bottom DBR of the fabry-perot structure. The two mirrors are thus separated by an air gap, and this air gap that can be changed by applying an electrical field to the top and bottom electrodes of the device. The change in air gap size makes it possible to tune the resonant frequencies of the device. (Tayebati, col. 6, lines 19-31) Tayebati indicates that the sequence of the fabrication process for cantilever-shaped top mirrors is illustrated in Figures 5A-5D. In the second step of the

Tayebati fabrication steps, etching is performed. The etching is performed using photo-resist as a masking layer, the sample is etched until the sidewalls of the bottom DBR is exposed. The exposure of sidewalls will make it possible to selectively remove the sacrificial layers related to the bottom DBR mirror during subsequent steps and to replace them with air gaps. (Tayebati, col. 6, lines 44-58) Applicant notes at this point that Tayebati has, in fact, etched material away from the exposed sidewalls of the Tayebati DBR layers. As such, Applicant agrees with the Examiner, in the Tayebati Office Action mailed December 19, 2002, pg. 2, that Tayebati fails to teach a support layer formed over the sidewalls of any of the DBR layers. In fact, looking at the Figures of Tayebati, no support walls formed over the sidewalls of any of the layers are depicted. Furthermore, Tayebati does not discuss and is not concerned about any collapse problem related to the DBR layers. Tayebati teaches and requires unsupported edges and uses a cantilever technique to allow some of the layers to move with respect to other layers. (Tayebati at col. 2, lines 30-40 and col. 6, lines 19-58) There is no suggestion or motivation in Tayebati to require or suggest a need for a support layer formed over a portion of the sidewalls to support the DBR layers against collapse into one or more of its gaps.

Baillargeon et al. relates to a semiconductor light emitter and, more particularly, to techniques and designs for mounting intersubband (ISB) light emitters on heat sinks. (Baillargeon et al at col. 1, lines 12-15) Figure 1 of Baillargeon et al. depicts an ISB semiconductor light emitter/source 10 having an epitaxial region 13 grown thereon. The epitaxial region includes a core region 14 which is sandwiched between an upper cladding region 16 and a substrate 12. The core region includes an active region 24 sandwiched between a pair of high refractive index regions 14.1 and 14.2. Each of the high refractive index regions has a high refractive index relative to that of the cladding regions. (Baillargeon

et al. at col. 4, line 61 through col. 5, line 2) An electrically insulating layer 18 is formed over the top of the device and is patterned to form an opening which exposes a portion of the top of the mesa. (Baillargeon et al. at col. 5, lines 14-16). Applicant notes that the electrically insulating layer 18 is not for supporting any of the layers included in the cladding region 16, the active region 24 or the high refractive index regions 14.1 and 14.2 because there are no gaps, such as air gaps, between the various layers. Baillargeon et al. goes on to state that “in some designs of a spontaneous emission source in accordance with our invention, the cladding regions may be omitted, especially if they absorb light at the operating wavelength of the device.” (Baillargeon et al. at col. 5, lines 46-49, *emphasis added*) Applicant respectfully points out that by omitting the cladding regions Baillargeon et al. is not indicating that there are gaps or air spaces between the remaining layers, but instead that the remaining layers are in contact with each other. Applicant points out that “omit” is defined as “1. to leave out or leave unmentioned; 2. to fail to perform or make use of”, Merriam-Webster Collegiate Dictionary, 10<sup>th</sup> edition, 1998. Thus, there are no gaps or air gaps discussed in Baillargeon et al.

Kudo et al (U.S. Patent No. 5,303,255) was originally cited by the Examiner with respect to claims 13 and 18-19. (See Kudo et al. Office Action dated December 19, 2002, pg. 3, first paragraph.) In Figure 1, Kudo et al. teaches a current blocking layer 9 made of n-GaAs. The current blocking layer uses GaS as an insulating layer in a GSB semiconductor laser device, but, there is no discussion of the current blocking layer 9 being utilized as a support layer in Kudo et al.. Kudo et al. does discuss having a stripe groove 15 that creates a space or discontinuity in a single layer but, the groove does not create a gap between layers. There is also no discussion of a support structure in Kudo et al. for supporting gaps between layers.

**B. Applicable Law**

To establish a *prima facie* case of obviousness, the three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in a knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference(s) when combined must teach or suggest all of a claim's limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must be found in the prior art, not be based on the Applicant's disclosure. *In Re In Re Vaeck*, 947 F2d 488 (Fed. Cir. 1991).

**Motivation To Combine Must Be Shown**

Obviousness **can only** be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so in the reference themselves or in the knowledge generally available to one of ordinary skill in the art. *In Re Fine*, 5 U.S.P.Q. 2d 1596 (Fed. Cir. 1998). A mere conclusionary statement indicating that modifications of the prior art to meet the claimed invention would have been "well within the ordinary skill of the art at the time the claimed invention was made" because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness **without some objective reason to combine the teachings of the references** *Exparte Levengood*, 28 U.S.P.Q. 2d 1300 (Bd. Pat. App. & Inter. 1993). The Federal Circuit in *In Re Zerco*, 258 F3rd 1379, 1385 (Fed. Cir. 2001), noted that "deficiencies of the cited references cannot be remedied by the board's general conclusions about what is "basic



knowledge” or “common sense” to one of ordinary skill in the art. *Id.* at 1697. In other words, *In Re Zerco* expressly proscribes any reliance by an Examiner on what constitutes the knowledge of one skilled in the art, when the assessment of that knowledge is not based on any evidence in the record. More recently, the Federal Circuit reiterated this position in *In Re Lee*, where it took issue with the fact that “neither the Examiner nor the Board adequately supported the selection and combination of the ...references to render obviousness that which [patentee] described.” (*In Re Sang-Su Lee*, Serial No. 07/631,240, decided January 18, 2002.)

If a proposed modification would render the prior art teaching being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In Re Gordon*, 733 F2nd 900 (Fed. Cir. 1984).

#### There Must Be A Reasonable Expectation of Success

The prior art can be modified or combined to reject claims as *prima facie* obvious as long as there is a reasonable expectation of success. *In Re Merc & Co., Inc.*, 800 F2nd 1091 (Fed. Cir. 1986). Evidence shows that there is no reasonable expectation of success supports a finding of non-obviousness. *In Re Reinhart*, 531 F2nd 1048 (C.C.P.A. 1976).

#### All Claim Limitations Must Be Taught Or Suggested

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In Re Royka*, 490 F2nd 981 (C.C.P.A. 1974). In other words, “[A]ll words in a claim must be considered in judging the patentability of that claim against the prior art.” *In Re Wilson*, 424 F2nd (C.C.P.A. 1970).

C. No Motivation to Combine

The Examiner has not established a *prima facie* case of obviousness. The Examiner has failed to demonstrate any of the criteria required for a showing of *prima facie* obviousness, particularly, the requirement that there be a suggestion or motivation to modify the cited art or combine the reference teachings. The mere fact that references can be combined or modified does not render the resultant combination obvious **unless the prior art also suggests the desirability of the combination.** *In Re Mills*, 916 F2nd 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990).

In the first Office Action mailed December 19, 2002, attached hereto as Appendix 3, the Examiner stated that “Tayebati fails to teach a support layer formed over the sidewalls to the second layers. Baillargeon et al. teaches the use of a support layer (18 and 20) formed over the sidewalls of a bragg reflector (Figure 1). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the structure of the Tayebati with the support layer of the Baillargeon et al. reflector for the purpose of creating a heat sink in the instance that the bragg reflector was being used to create a laser.” (Office Action mailed December 19, 2002 at page 2.) Apart from conclusorily stating that it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the structure of the Tayebati reflector with the support layer of the Baillargeon et al. reflector for the purpose of creating a heat sink in the instance of the bragg reflector being used to create a laser, the Examiner has not shown any motivation or suggestion for combining the references either in the references themselves or in the prior art.

Tayebati requires that the layers have gaps between them and further requires that there be unsupported edges on the layers such that a cantilever technique is used to allow the layers to move with respect to each other. (Tayebati at col. 2, lines 30-40 and col. 6, lines 19-

58.) As such, not only does Tayebati teach away from, but there is also no suggestion or motivation in Tayebati for the need or the requirement for a “support layer formed over a portion of the sidewalls to support the second layers against collapse into one or more gaps.”

Furthermore, the Examiner has not shown a motivation in Baillargeon et al. to combine with Tayebati. The Examiner states that “Baillargeon teaches the support layer comprising an electrically insulating material” (col. 5, lines 14-15). Applicant points out that the electrically insulating layer 18 is intended to electrically insulate in Baillargeon et al. There is no mention or discussion of it being a support layer mainly because there are no gaps or air gaps that require support in Baillargeon et al. (Baillargeon et al. at Figure 1 and col. 4, line 61 through col. 5, line 22). There is also no mention or discussion in Baillargeon et al. of the Examiner’s erroneously mentioned heat sink ability. Applicant notes that neither Tayebati nor Baillargeon et al. discuss the need or establishment of a heat sink. The Examiner has not shown any proper motivation or suggestion for combining the references either in the references themselves or in the prior art. The Examiner has made a conclusionary assertion of obviousness that has no basis other than the Examiner’s reliance on the knowledge of one of ordinary skill in the art which is specifically disallowed by *In Re Zurko*. Furthermore, Kudo et al. provides no help in the matter because Kudo et al. neither provides a teaching of a gap between layers nor does it provide a discussion of a support layer formed over at least a portion of the sidewalls. As such, because none of the prior art, nor the cited references, provide the necessary motivation to combine the references, a *prima facie* case of obviousness has not been established for claims 12-20.

D. The Proposed Modification Renders the Prior Art Unsatisfactory for Its Intended Purpose

It's the Examiners position that the combination of Tayebati in view of Kudo et al and Baillargeon et al. will result in a working device. The Examiner states that "the addition of the support structure of Baillargeon to the Tayebati reference would not completely eliminate the ability of the layers of Tayebati to move. The center portions of the Tayebati layers may still move once the support structure of Baillargeon is added." (Office Action mailed May 5, 2003, pg. 3). Applicant strongly disagrees with the Examiner and submits that the Examiner's statement is not based on any information found in Tayebati or Baillargeon et al. Applicant points out that Tayebati teaches that his device functions due to the formation of a cantilevered layer. In particular, Tayebati states "a novel tunable fabry-perot filter based on Applicant's GaAlAs/air mirror is shown in Figure 1B. The device consists of top and bottom GaAlAs/air mirrors and an AlAs cavity spacing which is etched away to allow formation of a cantilever. Application of an applied field will change the cavity length and shift the transmission peak of the fabry-perot filter. (Tayebati at col. 1, lines 49-54.) Tayebati also states in referring to Figures 1B, 1C and 1D, "in this new tunable VCSEL, the top GaAlAs/air mirror is formed into a cantilever which can be moved up and down electrostatically to tune the lasing wavelength. (Tayabati at col. 2, lines 30-36) A cantilever is defined as a projecting beam or member supported only at one end. (Merriam Webster's Dictionary, 10<sup>th</sup> edition, 1998.) Therefore, the modification proposed by the Examiner would render the prior art device being modified, (i.e., the Tayebati reference) unsatisfactory for its intended use if the alleged immobilizing support structure of Baillargeon et al. were added. The whole purpose of Tayebati's structure is to be unsupported in a cantilevered fashion so that the air mirror can move resulting in a tunable device. Applicant submits the Examiner suggested

modification renders the prior art unsatisfactory for its intended purpose, and hence there is no *prima facie* case of obviousness.

E. No Reasonable Expectation of Success

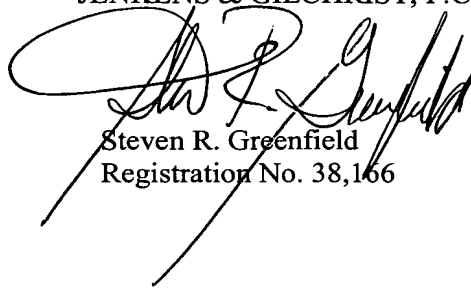
Tayebati teaches that there are gaps between the layers. As discussed above, Applicant submits that Baillargeon et al. teaches that there are no gaps between the layers. Baillargeon et al. does not teach the removal of cladding between layers. Instead, Baillargeon et al. teaches that “the cladding regions may be omitted.” (Baillargeon et al. at col. 5, lines 46-49.) By omitting the cladded regions, Baillargeon et al. is indicating that the remaining layers would be in contact with each other rather than separated by a gap. Since there is no gap in Baillargeon et al., the electrically insulating layer 18 and the first electrode 20, which is formed over the insulating layer 18, cannot be considered supporting layers for supporting any gap structure. At a minimum, without a support structure for supporting against a collapse of a layer into a gap found in Baillargeon et al, there is no reasonable expectation of success found in the prior art. *In Re Vaeck* requires that the teaching or suggestion to make the claimed combination and the reasonable expectation of success must be found in the prior and that not based on the Applicant’s disclosure. Therefore, in light of the teachings of the prior art provided, there is no reasonable expectation of success for the combination of the teachings of Tayebati in view of Baillargeon et al. and/or Kudo et al.

IX. Conclusion

For the reasons set forth above, a *prima facie* case of obviousness has not been presented by the Examiner. Accordingly, it is believed that the Examiner must be reversed and the Applicant respectfully requests the reversal of the Examiner on these grounds.

Respectfully submitted,

JENKENS & GILCHRIST, P.C.



Steven R. Greenfield  
Registration No. 38,166

Date: Nov 3, 2003

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Appendix 1 – Pending Claims

1           12. (previously presented) A Bragg reflector comprising:  
2           one or more first layers adjacent one or more second layers, the first and second layers  
3           having at least one sidewall, wherein the first and second layers define one or more gaps; and  
4           a support layer formed over a portion of the sidewalls to support the second layers  
5           against collapse into the one or more gaps.

1           13. (original) The Bragg reflector of claim 12 wherein the second layers and the  
2           support layer comprise substantially the same material.

1           14. (original) The Bragg reflector of claim 12 wherein at least a portion of the  
2           support layer is electrically conductive.

1           15. (previously presented) The Bragg reflector of claim 12 wherein a portion of the  
2           support layer is electrically non-conductive.

1           16. (original) A distributed Bragg reflector comprising:  
2           a substrate;  
3           a plurality structure layers on the substrate each spaced apart by a gap, the  
4           structure layers each having edges; and  
5           a support layer about a portion of the edges for supporting the structure layers.

1           17. (original) The distributed Bragg reflector of claim 16 further comprising  
2   sacrificial layers between the structure layers, the sacrificial layers undercut to define the  
3   gaps.

1           18. (original) The distributed Bragg reflector of claim 16 wherein the support layer  
2   comprises a material selected from the group consisting of InP, GaAs, and Si.

1           19. (original) The distributed Bragg reflector of claim 16 wherein the structure layers  
2   comprise a material selected from the group consisting of InP, GaAs, and Si.

1           20. (original) The distributed Bragg reflector of claim 16 wherein the support layer  
2   covers at least a portion of a top of the structure layers.



Patent Application  
Docket No. 10010430-1  
47429-00038USPT

Appendix 2



RESPONSE UNDER 37 C.F.R. § 1.116  
-- EXPEDITED PROCEDURE --  
EXAMINING GROUP NUMBER 2872

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the Application of:

SCOTT W. CORZINE

Serial No. 10/022,757

File Date: December 14, 2001

For: DISTRIBUTED BRAGG REFLECTOR AND METHOD OF FABRICATION

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Examiner: Joshua L. Pritchett

Group Art Unit: 2872

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Alexandria, Virginia 22313-1450

CERTIFICATE OF FACSIMILE

I hereby certify that this paper or fee is being facsimile transmitted to the Commissioner for Patents, Alexandria, Virginia 22313-1450

Date August 5, 2003

Signature Carol Marsteller

Dear Sir:

AMENDMENT

Responsive to the Final Official Action mailed on May 5, 2003; reconsideration and allowance of the present application are respectfully requested and believed to be appropriate in view of the following amendments and remarks:

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In the Claims

1           12. (previously presented) A Bragg reflector comprising:  
2           one or more first layers adjacent one or more second layers, the first and second layers  
3           having at least one sidewall, wherein the first and second layers define one or more gaps; and  
4           a support layer formed over a portion of the sidewalls to support the second layers  
5           against collapse into the one or more gaps.

1           13. (original) The Bragg reflector of claim 12 wherein the second layers and the  
2           support layer comprise substantially the same material.

1           14. (original) The Bragg reflector of claim 12 wherein at least a portion of the  
2           support layer is electrically conductive.

1           15. (previously presented) The Bragg reflector of claim 12 wherein a portion of the  
2           support layer is electrically non-conductive.

1           16. (original) A distributed Bragg reflector comprising:  
2           a substrate;  
3           a plurality structure layers on the substrate each spaced apart by a gap, the  
4           structure layers each having edges; and  
5           a support layer about a portion of the edges for supporting the structure layers.

1           17. (original) The distributed Bragg reflector of claim 16 further comprising  
2       sacrificial layers between the structure layers, the sacrificial layers undercut to define the  
3       gaps.

1           18. (original) The distributed Bragg reflector of claim 16 wherein the support layer  
2       comprises a material selected from the group consisting of InP, GaAs, and Si.

1           19. (original) The distributed Bragg reflector of claim 16 wherein the structure layers  
2       comprise a material selected from the group consisting of InP, GaAs, and Si.

1           20. (original) The distributed Bragg reflector of claim 16 wherein the support layer  
2       covers at least a portion of a top of the structure layers.

REMARKS

Reconsideration and allowance are respectfully requested in view of the foregoing amendments and the following remarks.

Claims 12-20 are pending in this application.

Regarding the § 103 Rejection

Claims 12-20 were rejected under 35 U.S.C. § 103(a) for being rendered obvious by Tayebati in view of Kudo and Baillargeon. Applicant respectfully traverses this rejection.

As stated in the previous amendment, § 706.02(j) of the MPEP recites that there are three necessary elements to establish a *prima facie* case of obviousness as adopted from *In Re Vaeck*. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. *In Re Vaeck*, 947 F2nd 488. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestions to make the claimed combination and their reasonable expectation of success must both be found in the prior art and not based on Applicant's disclosure. *Id.*

Applicant respectfully submits that a *prima facie* case of obviousness has not been established in the present office action. Applicant agrees with the Examiner that Tayebati fails to teach a support layer formed over the walls of the second layers. Moreover in Tayebati, there is no discussion of a need to support the edges. In Tayebati the collapse problem, which is solved by embodiments of the present invention, is not discussed. Tayebati teaches unsupported edges and uses a cantilever technique to allow the layers to

move with respect to each other. (See Col. 2, Lines 30-40 and Col. 6, Lines 19-58) As such, there is no suggestion or motivation in Tayebati to require or suggest a need for "a support layer formed over a portion of the sidewalls to support the second layers against collapse into one or more gaps." Applicant respectfully submits that Baillargeon teaches that there are no gaps between the layers. Baillargeon, at col. 5, lines 47-48 does not teach the removal of cladding, but rather teaches that "the cladding regions may be omitted" (see col. 5, lines 46-49). Baillargeon indicates that if the cladding regions 12 or 16 are omitted, the remaining incorporated layers would be in contact with each other rather than separated by a gap. Applicant respectfully submits that the Examiner is using hindsight in an attempt to make Baillargeon aid in obviating the claims.

There is no reasonable expectation of success with the combination of Tayebati, Kudo and Baillargeon. There is no suggestion to use the Baillargeon insulating layer 18 in combination with the movable Tayebati layers having air gaps therebetween. There is also no indication that putting a Baillargeon style insulating layer 18 on Tayebati will allow the Tayebati layers to continue to move to function properly. As such, the functionality of Tayebati is destroyed. There is no suggestion to combine the insulation layers of Baillargeon in conjunction with Tayebati. Kudo, by the way, does not help in this matter at all. Finally, the cited art references do not teach or suggest all the claim limitations. That is, the teaching or suggestion to make the claimed combination and their reasonable expectation of success must be found in the prior art and not based on the Applicant's disclosure. Here, Applicant submits the Examiner is using hindsight to combine Baillargeon to Tayebati rather than using the language within Tayebati and Baillargeon to find any reasonable expectation of success from combining a Baillargeon device (having no air gaps between layers) electrically insulating layer 18 (col. 5, line 15, Figure 1) with Tayebati's cantilevered layers with gaps

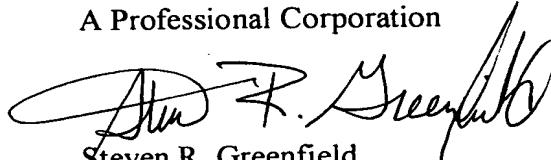
therebetween. Tayebati provides no discussion of a need to support the edges of the cantilevered layers. Baillargeon's insulating layer 18 is not considered a support layer in Baillargeon. In effect, the Examiner has combined Baillargeon, which does not have any air gaps between layers and therefore does not require support, but does have an insulating layer 18 on the edges of the various layers with Tayebati's cantilevered layers that do have air gaps between them and must be able to move with respect to each other in order to function as required by Tayebati. Again, Tayebati does not discuss the problem of layer collapse and does not indicate a need for additional support other than the cantilevers prescribed in Tayebati. Kudo does not add anything to resolve the inadequacies of Baillargeon and Tayebati. As such, there is no teaching or suggestion in the cited art to obviate the claimed combination and there is no reasonable expectation of success found in the cited art. As such, Applicant respectfully submits that the § 103 rejection should be withdrawn due to a lack of a *prima facie* case of obviousness. Applicant respectfully invites the Examiner to review Applicant's prior amendment along with this amendment carefully. Applicant believes the Examiner will understand that the present claims do not require amending because they are allowable over all art of record. Applicant requests that the § 103 rejection be withdrawn and submits that claims 12-20 are ready for allowance.

It is believed that the claims, as now constituted, patentably define Applicant's invention over all art of record. Furthermore, it is respectfully submitted that entry of this amendment is warranted even if it does not place these claims in condition for allowance because it clearly clarifies the nature of the confusion that is evidenced in pages 2 and 3 of the present Office Action. Accordingly, it is believed that entry of this Amendment is warranted under the provisions of 37 C.F.R. § 1.116 as it would clearly reduce those issues which might be present upon the filing of an appeal. Applicant respectfully submits that

entry of this Amendment is more importantly warranted in that it clearly distinguishes over all art of record. This application should be reconsidered and all claims be indicated as allowed. Applicant therefore respectfully requests entry of this Amendment, the reconsideration of this application and an early Notice of Allowance. Should the Examiner have any further questions or comments facilitating allowance, the Examiner is invited to contact Applicant's representative indicated below to further prosecution of this application to allowance and issuance.

Respectfully submitted,

JENKENS & GILCHRIST,  
A Professional Corporation



Steven R. Greenfield  
Registration No. 38,166

Date: Aug 5, 2003

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(Fax) 214/855-4300



Patent Application  
Docket No. 10010430-1  
47429-00038USPT

Appendix 3



## UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/022,757	12/14/2001	Scott W. Corzine	10010430-1	2523

7590

12/19/2002

AGILENT TECHNOLOGIES, INC.  
Legal Department, DL429  
Intellectual Property Administration  
P.O. Box 7599  
Loveland, CO 80537-0599

US ACTION 3-19-03  
DUE DATE \_\_\_\_\_  
Paper Dated \_\_\_\_\_  
OA ☒ FINAL  
Msg Pt \_\_\_\_\_ Dwgs \_\_\_\_\_  
Appeal \_\_\_\_\_ Issue Fee \_\_\_\_\_  
Other \_\_\_\_\_

EXAMINER

PRITCHETT, JOSHUA L

ART UNIT

PAPER NUMBER

2872

DATE MAILED: 12/19/2002

**RECEIVED**

JAN 06 2003

**AGILENT LEGAL**

Please find below and/or attached an Office communication concerning this application or proceeding.

SW 1/13/03  
resp to 1st OA 3/19/03  
deadline 6/19/03

1 H  
Senkins

<b>Notice of References Cited</b>	Application/Control No. 10/022,757	Applicant(s)/Patent Under Reexamination CORZINE ET AL.	
	Examiner Joshua L Pritchett	Art Unit 2872	Page 1 of 1

**U.S. PATENT DOCUMENTS**

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-6,326,646	12-2001	Baillargeon et al.	257/94
	B	US-6,324,192	11-2001	Tayebati, Parviz	372/20
	C	US-5,303,255	04-1994	Kudo et al.	372/96
	D	US-6,150,190	11-2000	Stankus et al.	438/72
	E	US-6,233,267	05-2001	Nurmikko et al.	372/46
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

**FOREIGN PATENT DOCUMENTS**

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

**NON-PATENT DOCUMENTS**

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

\*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)  
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

# Office Action Summary

Application No.

10/022,757

Applicant(s)

CORZINE ET AL.

Examiner

Joshua L Pritchett

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 12-20 is/are pending in the application.
- 4a) Of the above claim(s) 1-11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 12-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tayebati (US 6,324,192) in view of Kudo (US 5,303,255) and Baillargeon (US 6,326,646).

Regarding claim 12, Tayebati teaches a Bragg reflector with one or more first layers adjacent one or more second layers (Fig. 5a.). Tayebati further teaches the Bragg reflector having at least one sidewall (Figs. 5a-d; col. 6 lines 53-55). Tayebati further teaches a Bragg reflector where the first and second layers define one or more gaps (Fig. 5c.). Tayebati fails to teach a support layer formed over the sidewalls to the second layers. Baillargeon teaches the use of a support layer (18 and 20) formed over the sidewalls of a Bragg reflector (Fig. 1). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the structure of the Tayebati reflector with the support layer of the Baillargeon reflector for the purpose of creating a heat sink in the instance that the Bragg reflector was being used to create a laser.

Regarding claims 13 and 18-19, Tayebati teaches that the second layer is made of GaAs (col. 6 lines 32-43). Tayebati fails to teach a support layer of the same material as the second layer. Baillargeon teaches the support layer comprising an electrically insulating material (col. 5 lines 14-15). Kudo teaches the use of GaAs as a "current blocking layer," (col. 8 lines 50-51) therefore making the GaAs an electrically insulating layer. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the second layer and the support layer comprise the same material, namely GaAs for the purpose of cheaper production costs because of the elimination of an extra and different compound for the synthesis of the Bragg reflector.

Regarding claims 14-15, Tayebati teaches the invention as claimed but lacks reference to the support layer containing an electrically conductive and non-conductive portion. Baillargeon teaches the use of a support layer (18 and 20) with an electrically conductive portion (20) and an electrically non-conductive portion (18). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the support layer contain an electrically conductive and non-conductive portion as taught by Baillargeon for the purpose of supplying a pumping energy in order to create a laser out of the Bragg reflector.

Regarding claim 16, Tayebati teaches a Bragg reflector with a substrate and a plurality of structure layers spaced apart by a gap and with edges (Fig. 5d.). Tayebati lacks reference to a support layer about a portion of the edges. Baillargeon teaches the use of a support layer (18 and 20) formed over the sidewalls of a Bragg reflector (Fig. 1). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the structure of

Art Unit: 2872

the Tayebati reflector with the support layer of the Baillargeon reflector for the purpose of creating a heat sink in the instance that the Bragg reflector was being used to create a laser.

Regarding claim 17, Tayebati teaches the use of a sacrificial layer between the structure layers and the sacrificial layer being undercut to form the gaps (Fig. 5a-d; col. 6 lines 33-43).

Regarding claim 20, Tayebati teaches the invention as claimed but lacks reference to the support layer covering at least a portion of the structure layers. Baillargeon teaches the support layer covering at least a portion of the structure layers (Fig. 1). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the support layer cover at least a portion of the structure layers as taught by Baillargeon for the purpose of providing the reflector with optical and current confinement so as to allow the Bragg reflector to function as a laser.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Nurmikko (US 6,233,267) teaches the use of a Bragg reflector as a laser.

Stankus (US 6,150,190) teaches the creation of a Bragg reflector.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua L Pritchett whose telephone number is 703-305-7917.

The examiner can normally be reached on Monday - Friday 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on 703-308-1687. The fax phone numbers for the

Application/Control Number: 10/022,757

Page 5

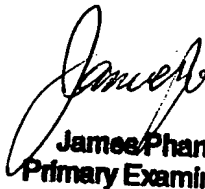
Art Unit: 2872

organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

JLP

December 10, 2002



James Phan  
Primary Examiner